Nutritional challenge in children with Congenital malformations

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Abstract

Background: Causes of protein-energy malnutrition (PEM) in them are multifactorial, and malnourishment could also be thanks to motor disorders, digestive problems, medicine use, and therefore the social environment.

PEM is one among the foremost serious medical problems round the world. consistent with WHO research, in poor families in 22-35% of youngsters aged 2 to six years, the weight (BW) is below the 5th percentile, the expansion of 11% of youngsters is below the 5th percentile. In hospitalized children, various sorts of PEM are still common, which aggravates the course of the disease, worsens their prognosis, and causes a delay within the physical and neurological development of youngsters.

In Ukraine, together of low income and middle income countries (LMICs), PEM is detected and diagnosed almost actively especially in children with neurologic impairment.

Objective: Assessment of nutritional status and nutritional support in children with congenital malformations of brain.


Keywords: Multidisciplinary team, Palliative care, Palliative patients, Clinical trail designs

INTRODUCTION

The anthropometric assessment of the youngsters, evaluation of oromotor dysfunction (OMD), a 24-hr dietary recall, assessment of nutritional status before (“baseline”) and after 6 months of implementing of food modification (“endline”) were studied. 17 children were recruited for the study (young children and pre-schoolers) who took part within the department of Palliative Care thanks to congenital malformations of brain. there have been 9 (53%) young children (0-36 months) and eight (47%) pre-schoolers (3-6 years). the typical age was 3.6±2.1 years. All caregivers were female.

METHODOLOGY

For nutritional status investigation the anthropometric assessment was used. Anthropometry was measured in accordance with the quality procedure. BW was measured employing a digital weighing Infant Scale and was recorded to the closest decimal place (0.1 kg). The H/L was estimated by means of Infant Length Board marked in cm and recorded nearest 0.1 cm. for youngsters with paralytic syndromes the H/L decided by measuring the length of the large tibia (cm) and calculated by formula thanks to inability to face, scoliosis or joint contractures of patients.

Additionally the nutritional status included a study of a 24-hr dietary recall and questionnaire of caregivers. the subsequent questions were included: 1. Does the kid usually eat alone or with others? 2. When does the kid eat? (Are the meals regular, what percentage times per day?) 3. Is there sufficient time for feeding? (Does the meal last more or but 30 minutes?) 4. does one apply special feeding (If no, what food does one choose?).

Result

The sample included 9 males and eight females. there have been 14/17 children with paralytic syndromes (I-V level of GMFCS). Severe cognitive impairment was established in 8/17. Prevalence of OMD was in total sample, and was distributed as “mild” in 2/17 children, “moderate” in 4/17 and “severe” in 11/17 children. Severe OMD is related to microcephaly, cognitive impairment and V level of GMFCS.

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The feeding time was different in 5 tube-fed children compared with 12 bottle-fed or spoon-fed children (median 11 min vs 32 min). There have been no significant differences in correlation of OMD severity, sex or age. The results of caregivers’ answers for questionnaire demonstrated that each one child had meals alone with none social component, regularly, minimum 4 times, maximum 6 times per day. None of them applied any special feeding formula. The meals length in 4 tube-fed children was even but 15 min. The 24-hr dietary recall demonstrated that only 3 children (younger than 1 year) received formula for feeding, others “adult” meal (porridges, vegetables, milk and meat, pureed by texture modifications for consistency). All children were unable to feed themselves and needed some feeding assistance.

**DISCUSSION**

The moderate PEM was diagnosed in 2/17 children, severe PEM in 12/17 from the entire cohort in “baseline” study. The distribution of PEM degree in “endline” was following: moderate PEM was found in 5/17 children, severe PEM in 9/17. Our data was collected to match the youngsters with NS and without NS. The youngsters with NS had much severe deviation of Z-score BW for age at “baseline” (median -6.2 vs -2.1) (MW test p=0.0111). We didn’t find any significant difference in Z-score deviation of H/L for age (median -2.7 vs -3.4) (MW test p=0.7429). The median of Z-score BW for age in total cohort was -3.2 [minimum -0.5 maximum -10.4], of H/L for age was -2.7 [minimum -0.5 maximum -7.1]. Among children who didn’t receive NS 2/8 children with loss of BW and 1/8 children with loss of H/L. In children who received NS 1/9 children with loss of BW and 4/9 children with loss of H/L. This means that a 6-month period with NS for PEM isn’t enough and requires further monitoring.

We found a big difference in changes of Z-score BW for age in children under NS during 6 mo “baseline” and “endline” (median -6.2 vs -5.4) (W test p=0.0208) and no significant difference in changes of Z-score H/L for age in children under NS during 6 mo “baseline” and “endline” (median -3.4 vs -3.4) (W test p=1.0).

To correct PEM in children with congenital malformations of brain, speech therapists and physical therapists were involved as members of the multidisciplinary team. We proposed a training staff for monitoring the nutritional status in children with PEM and involvement of caregivers.

**CONCLUSION**

The study demonstrated moderate and severe nutritional disorders in young children and pre-schoolers with congenital malformations of brain: Z-score BW for age in total cohort was -3.2, H/L for age was -2.7 in LMICs. Its results differ from the previous studies that include children with CP. Late appointment of nutritional support to such children has been demonstrated, also as its effect on increasing growth and weight. High-quality clinical trials are needed to raised comprehend the methodology of nutritive support in children with different neurological impairments. We proposed a training staff for monitoring the nutritional status in children with PEM and involvement of caregivers.

**References**


